Lower Willamette Group

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August 6, 2003

Mr. Travis Williams
Willamette Riverkeeper
380 SE Spokane Street, Suite 305
Portland, OR 97202-6464

RE: Willamette Riverkeeper Comments on the April 17, 2003 Draft Round 2A Field Sampling Plan for the Portland Harbor RI/FS

Dear Travis:

We have received Willamette Riverkeeper's June 25, 2003 comments on the Draft Round 2A Field Sampling Plan for the Portland Harbor RI/FS. We have prepared the following responses for your use.

General Comments:

1. ***Comment:*** *The goals of the Round 2A sampling are listed as providing supportive data for site characterization relative to sediment, assessment of benthic risks from contaminants in sediment and potential general impacts and specific human heath risks relative to sediment. In some instances it is not likely that the number of samples proposed will provide enough data to statistically demonstrate or describe these impacts.*

   Response: In accordance with EPA policy for investigating complex sediment sites ("Principles for Managing Contaminated Sediment Risks at Hazardous Waste Sites", OSWER Directive 9285.6-08), the LWG has proposed an iterative risk-based approach to the RI/FS. Round 2A is the second of at least four proposed rounds of field investigation and sampling for the RI/FS. As proposed in the programmatic work plan, data gaps will be determined using the data quality objectives process following each round of investigation. The work plan "roadmap" indicates that data gaps for site characterization remaining after Round 2A will be addressed in Rounds 2B and 3.

   For human health, direct contact with sediment will be evaluated to assess risks from sediment. As a result, sediment data are only needed for locations where direct contact by human receptors could occur, which are reasonably accessible beach sediments. Beach sediments were sampled during Round 1. To address bioaccumulative risks from sediment, fish tissue data will be used in the risk assessment. Fish tissue data were also collected during Round 1. Consequently, sediment data to support the human health risk assessment are not needed in Round 2A.

   For ecological risk, the number of samples is based on utilization of a benthic predictive model. If, following sampling, the LWG determines that more samples are needed based on the results of the model; additional samples will be collected at that time.

2. ***Comment:*** *One of the general comments on the programmatic work plan was the lack of consistency in identifying whether the intended area of study was limited to the ISA or included other portions of the River. While this work plan does a better job, especially in Section 2, there is still some need for clarity in other portions of the document.*

   Response: Sampling locations for Round 2A are shown in Figures 2-1a-c and 2-2. The location(s) of the area of study will be clarified in the final work plan.

3. ***Comment:*** *There are a number of instances throughout the document wherein additional supportive information would be useful in order to determine whether the proposed sampling will adequately meet the stated goals.*

   Response: Additional supportive information will be provided in the revised FSP.

4. ***Comment:*** *Where sampling goals are related to specific issues in the programmatic work plan, citations should be provided or a brief description included in this text as to how and where the data will be used. Many times the information provided in this work plan is too vague.*

   Response: Additional supportive information will be provided in the revised FSP.

5. ***Comment:*** *Some of the decisions on sediment sampling locations seem to be based on historical data. Given the dynamic nature of the river, how well does the historical data represent current conditions, and how suitable is this data for identifying sampling locations to characterize current conditions?*

   Response: Section 4.6 of the Programmatic Work Plan discusses the usability of the historical data in the RI/FS. Qualitative review of the historical data indicates that the data are appropriate for use in identifying sampling locations to characterize current conditions. Review of data collected off some sites over several years shows a consistent pattern of sediment chemical concentrations. Additionally, the locations of areas with elevated sediment concentrations tend to coincide with areas of long-term historical operations and upland contamination. This consistent pattern supports the idea that historical patterns are not lost over time in these areas. However, the LWG believes that due to the dynamic nature of the river environment, a sampling program that integrates time and river conditions over a period of several years will most accurately reflect sediment exposure concentrations as opposed to a "snapshot" of sediment quality at a given time. Therefore, sediment samples are proposed for sampling in areas that have been sampled previously to confirm the distribution of sediment chemical concentrations.

Specific Comments:

1. ***Comment:*** *Section 1, Page 1, First bullet. Does site characterization refer to the ISA or include areas outside of the ISA? How, when and under what circumstances will other areas be included?*

   Response: As stated in the last paragraph of Section 1.0 (p. 2), Round 2A will focus on the ISA but will include additional sampling in areas upstream and downstream of the ISA. As EPA and the DEQ have agreed, sample density will initially be greater in the ISA than outside of the ISA. During Round 2A, samples will be collected about 1.5 miles below the ISA (including in Multnomah Channel) to assess potential downstream migration, and 2/3 mile upriver of the ISA to evaluate potential upstream sources. Once site-specific, risk-based screening levels and background conditions have been identified during the RI/FS process, they will be applied to the

available sediment data. If the data show a contiguous chemical footprint of sediments at concentrations posing unacceptable risks extending downriver from the area of the ISA included in Round 2A sampling, then additional sampling will likely be conducted to determine the extent of this downriver contamination. Similarly, if such sediments were found to enter the ISA from upriver, then additional upriver sampling would be appropriate.

2. ***Comment:*** *Section 1.1.2, Page 4, Fourth bullet. Evaluation of existing upland site information is listed as a Round 1A activity. Is this complete, how and when was this conducted, what type of information is being collected, who is providing it, who is reviewing it? What criteria are being used as part of the review and how will this information be used? No report is cited as having been submitted. If these reviews have not been completed or submitted, then how is it they have been cited as being "helpful in selecting Round 2A sediment sample locations" (Page 5).*

   Response: Evaluation of the existing upland site information in DEQ files is ongoing; however, much information is available and has been documented by the LWG. As discussed in Section 2.1.2 of the Draft Round 2A FSP, the "FSP Presentation CD" (Appendix E) that accompanied the FSP includes a great deal of historical information for sites adjacent to and near the ISA, including summaries of past land use, current land use, chemicals of possible concern, potential migration pathways, and site regulatory status. The information was collected under the oversight of several DEQ regulatory and cleanup programs. On June 2, 2003, the LWG submitted to EPA the Upland Groundwater Data Review Report (GSI 2003), which contains a comprehensive summary of available physical and chemical groundwater data for sites adjacent to and near the ISA and an evaluation of sites along the ISA where groundwater data were not available.

3. ***Comment:*** *Section 1.1.3, Page 5. Will potential impacts to human health from contaminated sediments be addressed? This is not listed as a goal of Round 2A sampling. How and where will potential impacts to human health from surface water be addressed?*

   Response: As stated in the response to General Comment #1, beach sediment sampling was conducted during Round 1 to address sediment data needs for the HHRA. Surface water sample locations proposed for Round 2A to address human health data needs represent those areas where swimming might occur and that may not be adequately characterized by samples from the main river channel. The surface water data will be used in the baseline risk assessment to evaluate potential risks to recreational beach users and transients. The exposure factors that will be used in the risk estimates for surface water are presented in Appendix D of the Programmatic Work Plan.

4. ***Comment:*** *Section 1.1.3, Page 6, Round 2B sampling, Bullets 4,5,6. These items have the potential of identifying new source areas, why are they being evaluated so late in the sampling scheme? Identification of sources is listed as a Round 1 task. (Page 4).*

   Response: Source identification was initiated in Round 1 and will be an ongoing task throughout the RI/FS. Sampling of potential subsurface sediment "sources" and sampling related to potential groundwater impacts require the completion of several preceding RI tasks to be effectively focused. Hydrodynamic/sedimentation modeling has been proposed to identify locations were sediment erosion may potentially expose subsurface sediment. The LWG submitted a technical memorandum to EPA on April 4, 2003 that detailed the modeling proposal. Hydrodynamic/sedimentation modeling will require several months to complete once EPA has approved the approach. A general approach to evaluating groundwater impacts from upland

sources was provided in Section 7.2.3 of the Programmatic Work Plan. the first deliverable under that task is the Upland Groundwater Data Review Report (GSI 2003), which was submitted to EPA on June 2, 2003. The LWG is preparing a technical memorandum that specifies the approach for screening the upland groundwater results in order to identify areas that will require additional sampling to evaluate potential groundwater impacts to the river.

5. ***Comment:*** *Section 1.1.3, Page 6, Round 2B sampling, Bullet 7. Where will the data collection to assess natural attenuation take place? How will that location be selected. Will this be addressed in a separate work plan?*

   Response: The overall approach to Natural Attenuation Studies is described in the Programmatic Work Plan (p. 138). Appendix A, Attachment 4 (pp. 3-7) of that document describes the methods for selecting sampling locations in Round 2B. In summary, an evaluation of existing information on river processes will be conducted to select several representative areas for preliminary information gathering on natural attenuation processes, such as sedimentation and suspended sediment chemistry. The existing information evaluation, and the sampling locations selected based upon this evaluation, will be presented in the Round 2B FSP. As described in the Programmatic Work Plan, it is important to note that Round 2B sampling is exploratory in nature, and the primary natural attenuation sampling will occur in Round 3 sampling.

6. ***Comment:*** *Section 1.2, Pages 7–8. It is unclear in this paragraph what the relationship will be between information gathered in the ISA and outside of the ISA. What is the purpose of the data collected outside the ISA, how would that data be used? What criteria were used to determine those locations?*

   Response: See response to Specific Comment #1. The text in Section 1.2 will be clarified as to why samples are being collected outside the ISA. In general, samples collected outside of the ISA will be used to evaluate potential transport of contamination into and out of the ISA. Specific uses of, and rationale for, samples being collected outside the ISA are provided by river mile in Section 2.1.3 (see, for example, Section "Nearshore RM 2-3 Downstream of the ISA" on page 18).

7. ***Comment:*** *Section 1.2.1, Page 8, Surface Water, Last paragraph. Page 3 describes collection of data at 10 transect locations. Why are only 3 locations selected for surface water chemistry? Given the size of the ISA and variations within that area, it is unlikely that 3 locations will provide sufficient data to "develop an understanding of the chemicals present and the ranges of concentrations in the water column under different flow conditions and water depths".*

   Response: The discussion on page 3 refers to river water current measurement profile locations. For Round 2A, surface water chemistry has been proposed at 18 separate sample locations at three river transects and at eight other locations throughout the ISA. The transect locations will be sampled twice: at summer low-flow conditions and during stormwater runoff conditions. The rationale for the surface water sampling effort is provided in Section 2.2.2 of the FSP. The LWG believes that the proposed approach will achieve the surface water investigation objectives for Round 2A. Additional surface water sampling may be conducted based on the results of the Round 2A sampling and the ecological preliminary risk evaluation, which will identify bioaccumulative constituents of potential concern in the ISA.

8. ***Comment:*** *Section 1.2.2 Ecological Risk Assessment. Where in the programmatic work plan are the tasks identified in this section described? It is difficult to ascertain whether the type and amount*

of data collected in these sampling events will provide sufficient statistically sound data to perform these tasks.

Response: See Section 7.3 of the Programmatic Work Plan. See also the DQO tables in Appendix C of the Work Plan.

9. ***Comment:*** *Section 1.2.3, Human Health Risk Assessment. Which scenarios will this data support? What about potential impacts from ingestion of sediment and dermal contact with sediment? Why are these media not included in the human health section? There was also some discussion about potential impacts from groundwater seeps, how and where will this be addressed?*

   Response: The Round 2A data will support the recreational beach user and transient scenarios. As discussed in the response to General Comment #1, potential impacts from ingestion of, and dermal contact with, sediment will be addressed using the results of the beach sediment samples collected during Round 1. Because the samples were collected previously, beach sediment was not discussed in the Round 2A FSP.

   Groundwater seeps will be considered in the HHRA in locations where seeps are documented in human use beach areas. The approach to evaluate groundwater is still being developed, so groundwater will be addressed in a subsequent round of investigation.

10. ***Comment:*** *Section 2.1.1, Page 12, Ecological Risk Assessment. How will river dynamics be accounted for in the development of a model for co-location? Where is the development of the predictive model described? What if a predictive relationship cannot be found, what alternatives will be used for evaluating ecological impacts from sediments. How will the data collected in Round 2 support this effort?*

    Response: Collocated samples for toxicity testing and sediment chemistry will be taken at the same time, therefore, a prediction between sediment toxicity and chemistry does not have that confounding effect of temporal variation. River dynamics will be taken into account in the interpretation of the model results, in concert with the interpretation of the dynamic modeling effort, and other information necessary to understand future movements of sediments and the potential changes in exposure and toxicity as a result of the sediment movement. The predictive model is described in Appendix C of the Programmatic Work Plan. If a predictive model does not work, additional information will have to be collected to determine if there is a relationship between sediment chemistry and impacts to the benthic community. In Round 2, the data most useful will be the collection of sediment for both chemical analysis and toxicity testing.

11. ***Comment:*** *Section 2.1.2, Page 14, Third paragraph. See comment #4.*

    Response: See response to Specific Comment #4. It is also important to note that the LWG proposed more extensive sampling to evaluate potential source areas in the original Round 1 FSP; however, EPA did not approve that work. Therefore, only sediment samples collocated with biological (fish and shellfish) samples were collected in Round 1.

12. ***Comment:*** *Section 2.1.2, Page 15, Ecological Risk Assessment, First bullet. What is the source of this information? Is the primary intent of the sediment sampling and bioassays to demonstrate co-location? What if that can't be done?*

Response: The source of the information is the database of historic chemical concentrations. Collocation will be demonstrated through the use of a GPS system, and this will be done within the accuracy of the GPS unit's technical specifications. The primary intent is to determine what the biological response (i.e., toxicity) is to varying chemical concentrations in the sediment.

13. ***Comment:*** *Section 2.1.2, Page 16, #2 This could be explained a little more clearly. Was an exceedance factor calculated at each location?*

Response: Comment noted. Yes, an exceedance factor was calculated at each location.

14. ***Comment:*** *Section 2.1.2, Page 16, #3. This could be explained a little more clearly. Were the exceedance factors for metals and PAHs consistently the same throughout the ISA? What implications are being drawn from this?*

Response: Comment noted. No, exceedance factors were not the same. There was a range, which is good when using a predictive model. Areas that typically had high exceedance factors (i.e., high chemical concentrations in relation to an adverse effect level for benthic organisms), for metals and PAHs, also had elevated exceedance factors for other contaminants. This is also helpful to know when designing a sampling program.

15. ***Comment:*** *Section 2.1.2, Page 17, Second paragraph. It is unclear whether the number of samples in non-Tier I areas will be of sufficient number and statistical strength to identify these properties as a significant new source. What criteria will be used to make that determination given that the sampling is biased towards known areas?*

Response: In the absence of corroborating evidence from upland site assessments, identification of upland properties as sources exclusively by way of sediment sampling is not an objective of the RI. A weight-of-evidence approach will be used to determine if sampling off of non-Tier 1 areas is adequate; evidence considered will include location of samples relative to migration pathways (e.g., outfalls), trends of sediment chemistry from adjacent source areas, and historically observed and model-predicted changes in river bed bathymetry.

16. ***Comment:*** *Section 2.1.2, Page 18. It is unlikely that the limited number of proposed sampling locations would be sufficient to adequately characterize downriver conditions to the extent needed for adjusting the boundaries of the ISA.*

Response: In Round 2A, the LWG has proposed to collect 16 sediment samples from the river and Multnomah Channel downstream of the ISA. Results from more than 20 historical Category 1 and Round 1 sediment samples are available from the river downstream of the ISA. Additional sediment samples may be collected downstream of the ISA in Round 2B based on the results of the hydrodynamic/sedimentation modeling exercise. The LWG believes these data are adequate to evaluate the need to adjust the lower boundary of the ISA.

17. ***Comment:*** *Section 2.1.2, Page 28. See comment #16.*

Response: See response to Specific Comment #16.

18. ***Comment:*** *Section 2.1.2, Page 29, RM 8 – 9. See comment #16.*

Response: The LWG believes there are sufficient Round 2A and historical Category 1 samples at the upper end of the ISA to evaluate the need for adjusting the ISA boundary. There are over 150 historical Category 1 and Round 1 sediment samples available for most analyte groups from RM 8-10, which covers the reach of the river that straddles the upper boundary of the ISA.

19. ***Comment:*** *Section 2.1.5, Page 30. As some sources may not be identified until the Round 3 sampling, and it is unclear whether the data review from the Round 1 file review of upland sources is complete, is there sufficient data currently available to justify limiting the selection of analytes? Why are dioxins and furans being limited?*

    Response: The LWG disagrees that analytes are "limited," as all Round 2A sediment samples will be analyzed for metals, SVOCs, PCB Aroclors, and pesticides/herbicides. Within each of these analytical groups, all analytes normally reported by the analytical laboratories are being quantified. The LWG and EPA/DEQ agreed that analyzing all samples for dioxins and furans is neither technically justified nor practical due to the specificity of sources of these compounds and the associated cost.

20. ***Comment:*** *Section 2.2.1, Human Health Risk Assessment, Page 31. What impact does limiting surface water data to low flow conditions for purposes of the HHRA have on the overall data set? Will there be a sufficient number of samples collected to provide good site characterization and statistically sound data for this human health scenario?*

    Response: Swimming will likely occur only during low-flow conditions. As a result, low-flow conditions provide the best representation of surface water exposures for the scenarios considered in the risk assessment. The number of samples is based on the number of quiescent areas where swimming may occur and should provide adequate data to evaluate surface water exposure scenarios.

21. ***Comment:*** *Section 2.2.2, Page 32, Site Characterization. The question of sufficient number of samples is again at issue here. The sampling locations seem to indicate that only current use is considered. Where will future use conditions be addressed in terms of site development and increased river use as planned and proposed by the surrounding community?*

    Response: The objective of the site characterization is to understand the chemicals present and the ranges of concentrations in the water column under different flow conditions and water depths. Future use conditions do not need to be considered for purposes of site characterization. However, future uses were considered in the data needs for the human health risk assessment (see response to Specific Comment #23).

22. ***Comment:*** *Section 2.2.2, Page 32, Ecological Risk Assessment. The question of sufficient number of samples is again at issue here. The sampling locations seem to indicate that only current use is considered. Where will future restoration and enhancements be addressed in terms of site development and increased river use?*

    Response: See response to Specific Comment #10. The results of the predictive tool will be helpful in determining current vs. future risk based on sediment movement over time, and future restoration efforts.

23. ***Comment:*** *Section 2.2.2, Page 33, Human Health Risk Assessment. See comment #21.*

    Response: The selected human receptors and sample locations consider both current and potential future uses. Surface water samples are proposed in two quiescent areas (Willamette Cove and Swan Island Lagoon) where swimming may occur. Surface water data collected in the main river channel will be used to evaluate swimming that may occur in other areas of Portland

Harbor. The combination of data from quiescent areas and the main river channel is adequate to address both current and potential future uses if development and increased river use occur.

24. ***Comment:*** *Appendix A. Tables 2a and 2b are confusing and don't appear the match the text in Section 3.3 Page 4. As this provides the basis for the sampling depth, it would be important to make sure it is clearly illustrated and understood.*

    Response: The text in Section 3.3 and Tables 1a and 1b (there is no Table 2a or 2b) are consistent; however, revisions will be made to more clearly illustrate the points.

We hope that you find the above information helpful in your continuing review of this project.

Sincerely,

Bob Wyatt
Co-Chair

Jim McKenna
Co-Chair

cc: LWG Executive Committee
LWG Legal Committee